UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,332	06/04/2001	Juergen Schindler	12758-005001	4844

26161 7590 12/23/2004

FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER	
MERED, HABTE	

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/763,332	EGON SHULZ ET AL	
	Examiner	Art Unit	
	Habte Mered	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 7-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 7-11 is/are rejected.

7)☒ Claim(s) 12 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 June 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/29/2004.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The preliminary amendment received on 22 February 2001 is acknowledged. Claims 1 – 6 have been cancelled and amended with new claims 7 – 12 by applicant.

2. The information disclosure statement filed on 10 October 2001 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

DE 195 49 148

DE 198 17 771

DE 198 20 736

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

4. The disclosure is objected to because of the following informalities:

The single word "radiocommunication" in the title should be two words.

The specification needs to have proper section headings.

Appropriate correction is required.

5. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

6. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Objections

7. Claim 10 is objected to because of the following informalities:

Need to move the phrase "for each time slot" from its current position to just right after the phrase "base station".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 7and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda et al (US 6, 351, 461) hereafter Sakoda in view of Chen et al (US 6, 144, 710) hereafter Chen.

Regarding claims 7 and 8, the invention disclosed in these claims describes a TDMA system. Sakoda teaches TDMA allows a number of users to access a single radio-frequency (RF) channel by allocating unique time slots to each user within each channel. See Column 1, Lines 34–41. Sakoda describes the TDMA system in Figures 7 (a-g) where six mobile stations access one time frame employing a six time-division multiple access. See Column 10, Lines 7-10. Sakoda also shows that a group of time slots is assigned to each mobile station. The first mobile station (UO) uses time slots 0, 3, 6, 9, 12, 15 and 18 and the second mobile station (U1) uses a different group of time slots (i.e. 1,4,7,10,16,19, and 22). Sakoda shows that a subscriber separation method is used in the time frame where each group of time slots assigned to a mobile station contains a separate set of uplink and downlink time slots. For instance mobile station, UO, has time slots 3,9,15, and 21 for transmission and time slots 0, 6, 12, and 18 for reception defining in effect a TDD subscriber separation. See Column 9, Lines 51-66.

Sakoda, however, fails to disclose that radio blocks sent from the base station to mobile stations, have a midamble embedded between data sequences.

Chen teaches that in a TDMA system, the TDMA radio block sent in a single time slot has a midamble embedded between blocks of information bits or data as shown in Figure 2. See also Column 2, Lines 65-67, and Column 3, Lines 1-20. Further Chen shows that the data bursts or frames are sent from transmitter stations (base stations) to receiver stations (mobile stations) within a cell and outside a cell. See Column 3, Lines 30-36.

It would have been obvious to one having ordinary skill in the art at the time the invention is made to modify Sakoda's system in such a way to use a TDMA radio block in the manner suggested by Chen in a given time slot. The motivation is a desire to provide efficient channel estimation, as the midamble in the TDMA radio block is a training sequence known by the receiver as well as the transmitter.

10. **Claims 9 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda (US 6, 351, 461) in view of Chen (US 6, 144, 710) as applied to claims 7 and 8 above, and further in view of Anderson et al (US 6, 334, 057) hereafter Anderson.

Regarding claims 9 and 11, Sakoda and Chen as combined show that in a TDMA system, radio blocks transmitted from a base station to a mobile station in a given time slot have midambles embedded between user data (information) blocks. Sakoda and Chen also show that a TDMA time frame contains time slots where each mobile station has a different group of time slots assigned for uplink and downlink transmission.

Sakoda and Chen, however, fail to disclose that a spread spectrum TDMA system can be deployed by assigning different spread codes to different mobile stations.

Anderson teaches a TDMA system that uses the techniques of TDD and spread spectrum. It describes a TDMA system where each cell has an assigned frequency and spread spectrum code. Further it clearly states that there can be more or fewer spread spectrum codes as the need dictates. See Column 3, Lines 60-65 and Column 4, Lines 5-7. Anderson also shows that in the transmission between the base station and mobile stations that each mobile station has a resource unit consisting of a time slot and a spread code. See Column 16, Lines 5-25

It would have been obvious to one having ordinary skill in the art at the time the invention is made to modify Sakoda's and Chen's embodiment in such a way to use it in an environment created by Anderson's invention where orthogonal set of codes are used. The motivation is a desire to minimize interference, increase frequency reuse and ultimately increase capacitance in the system.

11. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda (US 6, 351, 461) in view of Chen (US 6, 144, 710) as applied to claim 7 and 8 above, and further in view of Rikkinen et al (US 6,031,827) hereafter Rikkinen.

Regarding claim 10, Sakoda and Chen as combined show that in a TDMA system, radio blocks transmitted from a base station to a mobile station in a given time slot have midambles embedded between user data (information) blocks. Sakoda and Chen also show that a TDMA time frame contains time slots where each mobile station

has a different group of time slots assigned for uplink and downlink transmission. Sakoda and Chen also show that a mobile station can use an entire time slot by itself to send a radio block.

Sakoda and Chen, however, fail to disclose that two different mobile stations can share a time slot to send two orthogonal radio blocks.

Rikkinen teaches in a single time slot of a channel at least two data sequences are transmitted which are either both allocated to the same mobile station or allocated to different mobile stations and is applicable in a TDMA system. Rikkinen also shows that spread codes can be assigned to the mobile stations, which will make the radio blocks, transmitted from the different mobile stations in the same time slot orthogonal. See Column 2, Lines 44-54; Column 3, Lines 50-55; Column 5, Lines 11-20; Column 6, Lines 43-55; Column 8, Lines 23-33; Column 9, Lines 1-10; and Column 16, Lines 38-53

It would have been obvious to one having ordinary skill in the art at the time the invention is made to modify Sakoda's and Chen's embodiment in such a way to use it in an environment created by Rikinnen's invention where a time slot is shared by two different mobile stations. The motivation is a desire to increase frequency reuse and ultimately increase capacitance in the system.

Allowable Subject Matter

12. **Claim 12** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims. Regarding claim 12 the cited references taken individually or in combination fail to particularly disclose a method where in one time slot with both data sequences is allocated to one mobile station in every third frame of voice information, and one time slot with only one data sequence is allocated in two out of three frames of voice information.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent is cited to show the state of allocating shared time slots in cellular radio communication:

US Patent (5, 894, 472) to De Seze

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HM

RICKY NGO
PRIMARY EXAMINER